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PATENT SPECIFICATION

555,216



Application Date: Dec. 4, 1941.

No. 15662/41.

Complete Specification Accepted: Aug. 11, 1943.

COMPLETE SPECIFICATION

Improvements relating to Belt Conveyor-Driving Devices

We, ANGUS WELLESLEY DUNCAN, a British subject, and THE MINING ENGINEERING COMPANY LIMITED, a British company, both of the company's address, 6 Meco Works, Worcester, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The diversity of methods of operating belt conveyors, particularly those used underground in mining practice where there is a wide variation of conditions of use, has resulted in the production of a number of different arrangements of driving unit the majority being located at the delivery end of the conveyor but some being located at the return end or intermediate points.

In general these driving units are designed to suit one particular application and elaborate adaptations have to be made if there is any change in the condition of working. This results in a multiplicity of designs with consequent difficulty and expense in manufacture.

The idea underlying the present invention is to provide a basic unit which is itself a complete assembly of all the main items common to a number of types of drive and which is so designed that it can be readily combined by the manufacturer with the necessary one or more additional items to make up a complete driving arrangement of any of the various types. It is to be clearly distinguished from the idea of assembling the same parts differently to enable the driving motor to be mounted on either side of the unit which remains unchanged in type, though such a unit may be capable, if symmetrical of accepting a belt coming in from either side by changing the position of a supporting idler.

Accordingly, one part of the invention is a method of manufacturing belt conveyor driving devices which includes the employment of similar standard basic structures of side members carrying two driven drums, and arranged for attachment of gears connecting the drums, reduction gearing and a driving motor, the

said basic structures being assembled in complete driving devices of a number of different types by the combination of the basic structures in some cases with snub drums, and in others with mangle roller fittings which they are formed to accommodate, as well as with fixed or detachable jibs, mounting skids, connections for inserting a driving device in the run of a conveyor structure or such other units or parts as may be necessary for the particular type of drive required in any particular case.

Another part of the invention is the basic unit designed to carry out the underlying idea and its combination and arrangement with additional units, or items which may be applied quickly and easily to make up a complete drive suitable for a particular application. Those parts of the invention for which a monopoly is desired are set out in the claims.

A typical form of the invention is illustrated by the accompanying drawings in which:—

Fig. 1 is a plan view of a drive made up of a basic unit with a snub drum and supporting idler and brackets for the upper run of the belt,

Fig. 2 is a side elevation,

Fig. 3 is a section on the line III—III of Fig. 2,

Figs. 4 to 10 are diagrams illustrating a number of typical combinations of the basic unit with other units or parts.

The basic unit as illustrated includes a pair of side plates 1, 1 in which are mounted a primary driving drum 2 and a secondary driving drum 3. Gears 4 and 5 connecting the drums and their cover 6 are attached, as is the reduction gearing indicated at 7 and the compressed air (or electric or other) motor indicated at 8—see Fig. 1. The reduction gearing is coupled to the primary driving drum 2 through the coupling 9 (Fig. 3). Cross frames are inserted between the side plates, central and end upper frames being indicated at 10 and 11 and corresponding bottom frames at 12 and 13 (Fig. 2). As illustrated at Figs. 1 to 4 the basic unit is fitted to form a complete snub drum drive

[Price 1/-]

for the delivery end of a conveyor. The snub drum 14 has its shaft keyed in a support bracket 15 at one end and supported in a plain bracket 16 at the other. Brackets 17 are fitted for receiving the connecting pins of an adjacent length of conveyor and for supporting an idler 18 for the upper run of the belt. Feet are formed by the attachment by brackets of transverse members 19. A cover 20 is shown over a bore left for fitting a mangle roller as in other examples shown at Figs. 5, 7, and 9. When the mangle roller is used, the snub drum supporting brackets may be replaced by covers. A top cover 21 is also fitted.

Fig. 5 shows the basic unit combined similarly except for the removal of the snub drum and the substitution of a mangle roller drum 22 and spring pressure mechanism 23 as described in a co-pending Specification No. 11938/41 (Serial No. 548,523).

Fig. 6 shows the basic unit reversed as to its delivery direction with a short jib extension 24 carrying a jockey pulley 25 and delivery drum 26. At what was previously the delivery end of the unit is now a guide pulley 27 and a bracket 28 for receiving the adjacent length of conveyor and supporting idler 29. Fig. 7 is similar except for the fitting of the mangle roller unit 22, 23. A modified cover 30 is used in these cases. Figs. 8 and 9 are similar to Figs. 6 and 7 except for the use of a larger detachable jib secured by fitting a jib attachment unit 31 and a larger cover 32. Fig. 10 shows the basic unit used in forming a drive located at an intermediate part of the conveyor. The two drums drive on the return run of the belt and the basic unit is combined with mounting skids 33 and appropriate support for the idler 34 and connections to the adjacent runs of conveyor. Remote delivery can also be arranged with the addition of the mangle roller unit.

Numerous other arrangements can be contrived but these examples will suffice to show that the basic unit lends itself by the fitting of additional parts to the production of complete driving units equivalent to the types at present covered by a variety of different designs. This results in considerable simplification in manufacture and consequently cheaper productions. Other examples of drives which can be met by the use of the basic unit in combination with simply applied

fittings are tail end driving of top carrying conveyors and various methods of driving bottom loading conveyors.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In the manufacture of belt conveyor driving devices the employment of similar standard basic structures of side members carrying two driven drums, and arranged for attachment of gears connecting the drums, reduction gearing and a driving motor, the said basic structures being assembled in complete driving devices of a number of different types by the combination of the basic structures in some cases with snub drums, and in others with mangle roller fittings which they are formed to accommodate, as well as with fixed or detachable jibs, mounting skids, connections for inserting a driving device in the run of a conveyor structure or such other units or parts as may be necessary for the particular type of drive required in any particular case.

2. A basic structure for incorporation in various conveyor driving devices which includes side member carrying two driven drums and arranged for attachment of gears connecting the drums, reduction gearing and a driving motor, the structure being formed to accommodate a snub drum and a mangle roller unit, idlers for an upper run of belt, jibs and connections for adjacent conveyor structure at both ends, any of which may be incorporated with the basic structure in forming a complete driving device.

3. Conveyor driving devices of several different types including a snub drum type and a mangle roller type, all incorporating the same basic structure of side members carrying two driven drums and arranged for attachment of gears connecting the drums, reduction gearing and a driving motor.

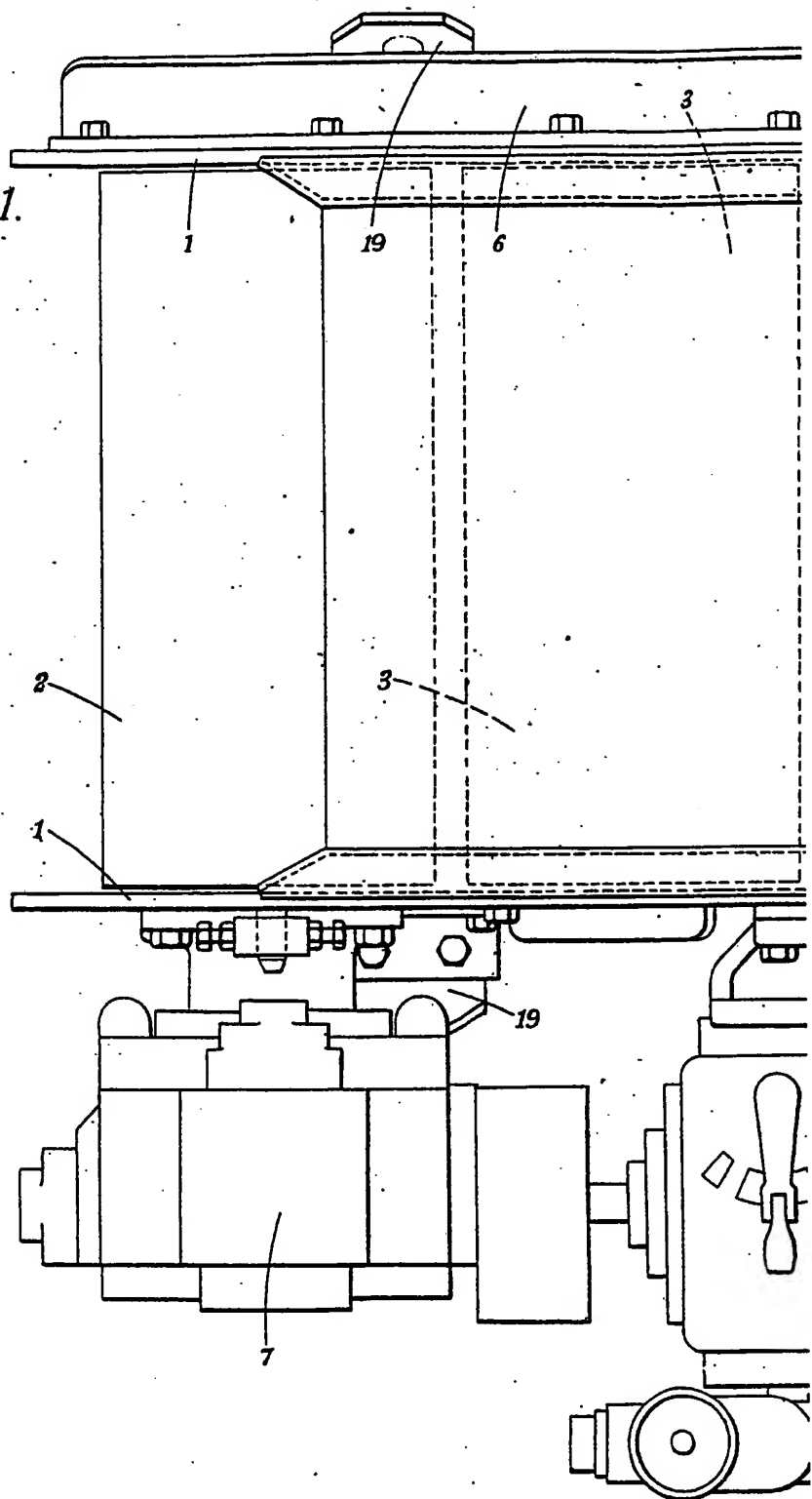
4. The several forms of conveyor driving device substantially as illustrated at Figs. 4 to 9 of the accompanying drawings and incorporating a basic structure as claimed in claim 2.

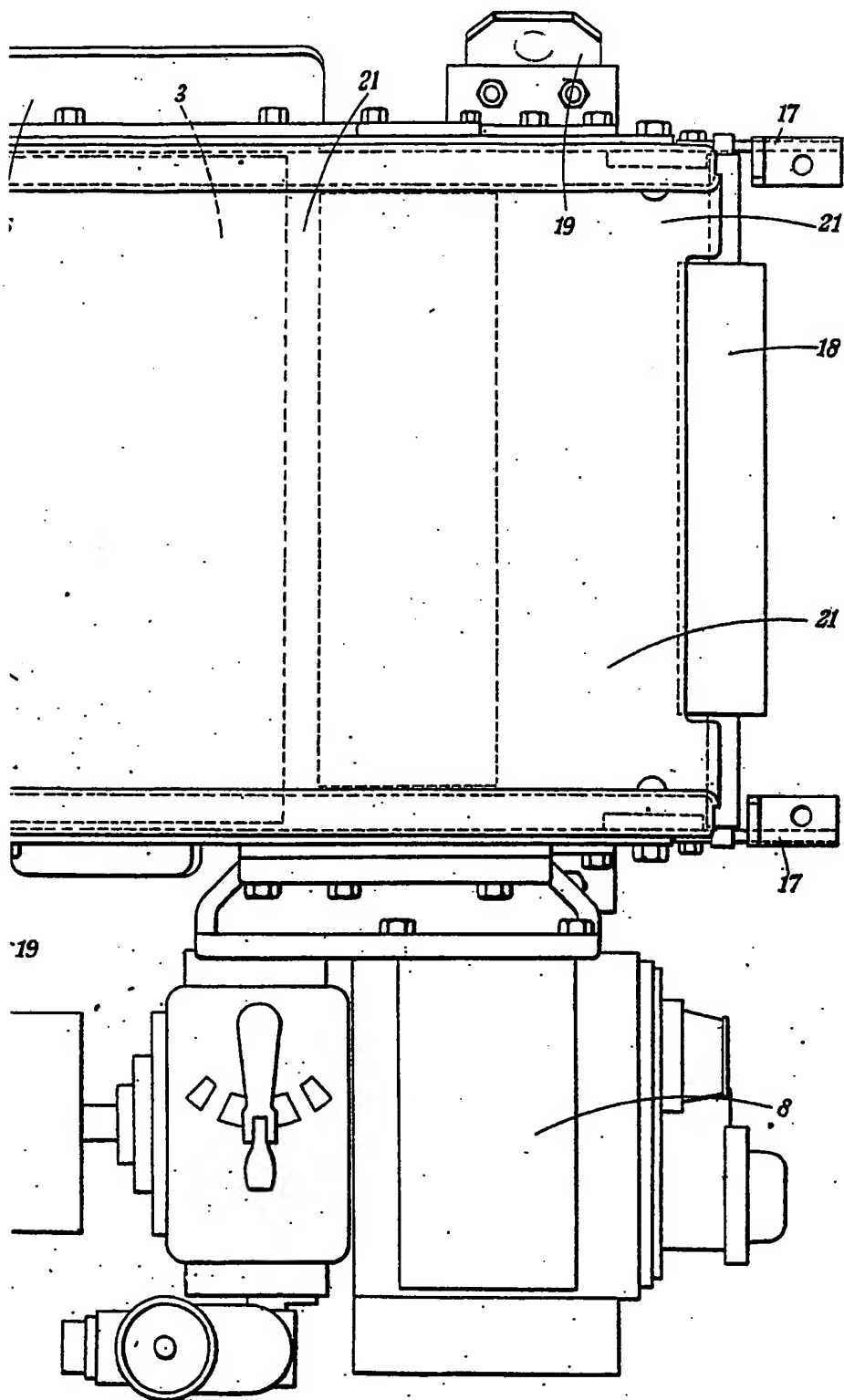
Dated the 4th day of December, 1941.

ANDREWS & BYRNE,
Agents for the Applicants,
201—6, Bank Chambers,
329, High Holborn, London, W.C.1.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.





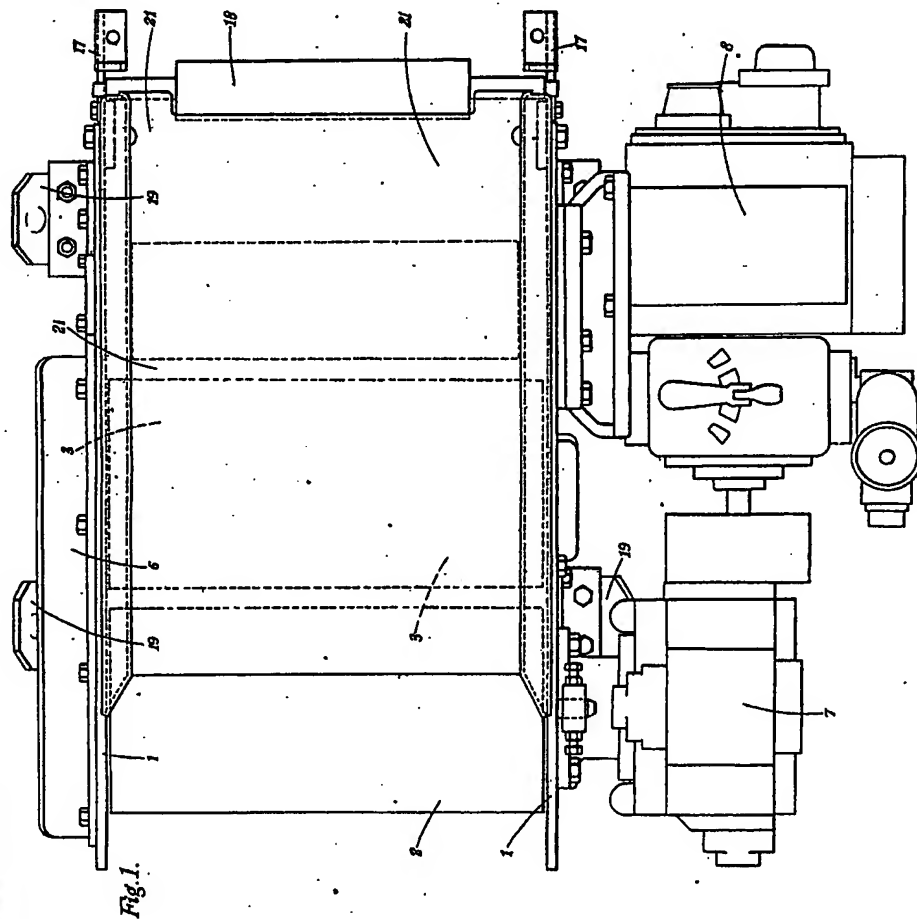


Fig. 2.

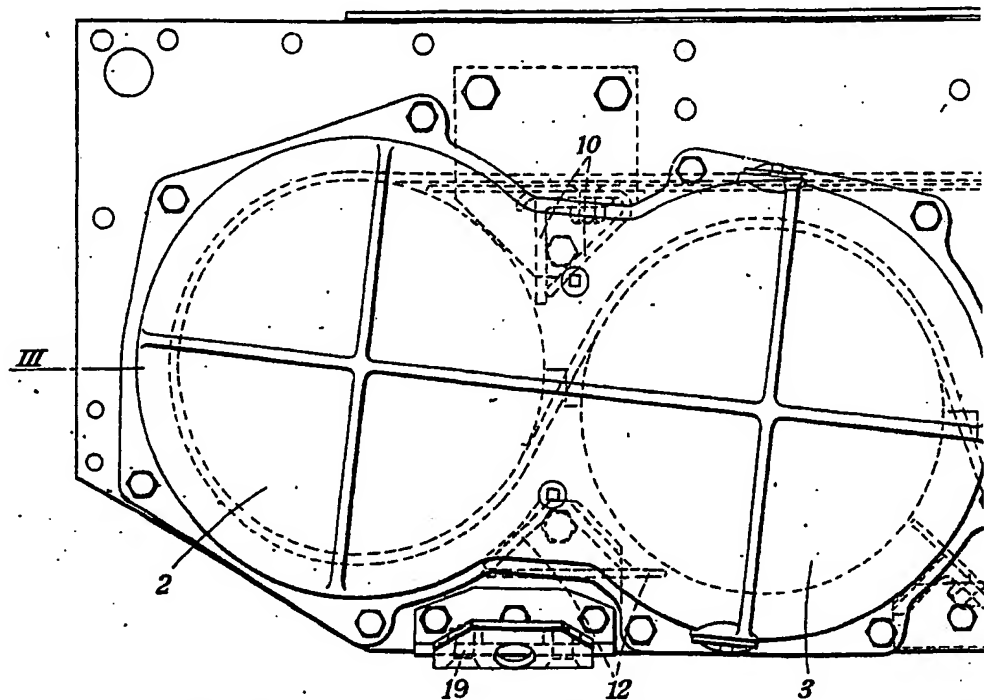


Fig. 4.

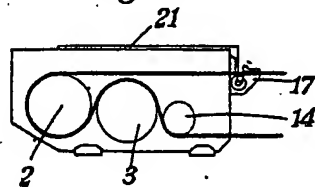


Fig. 5.

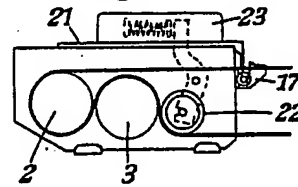


Fig.

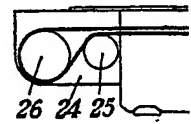


Fig. 8.

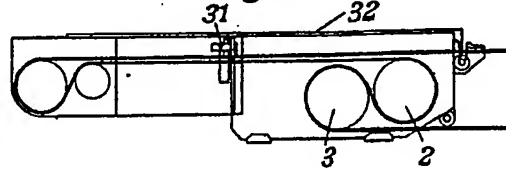
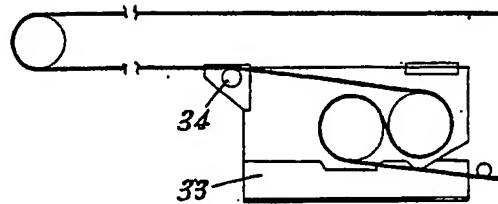


Fig. 10.



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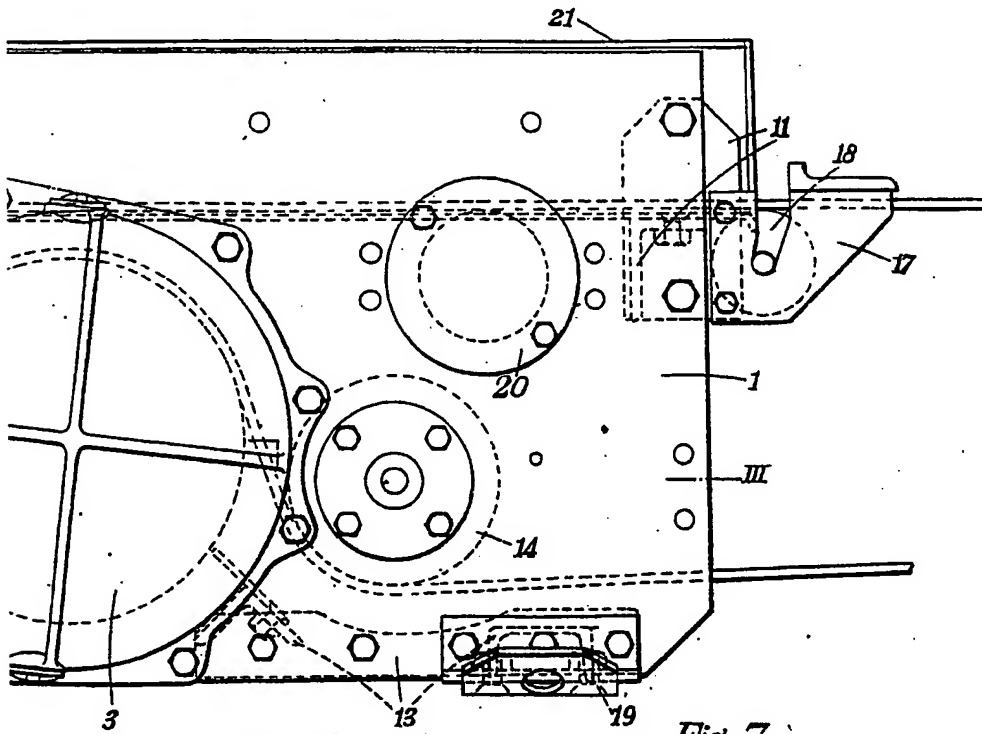


Fig. 6.

Fig. 7.

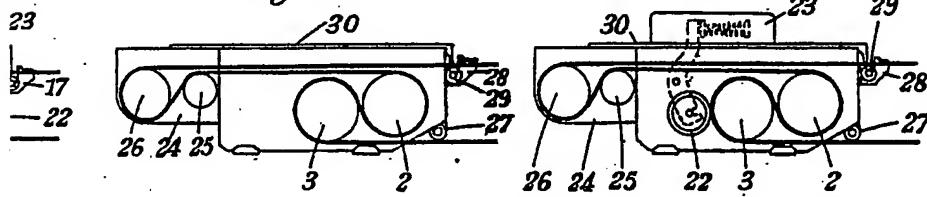


Fig. 9.

Fig. 10.

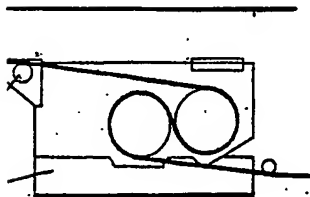


Fig. 2.

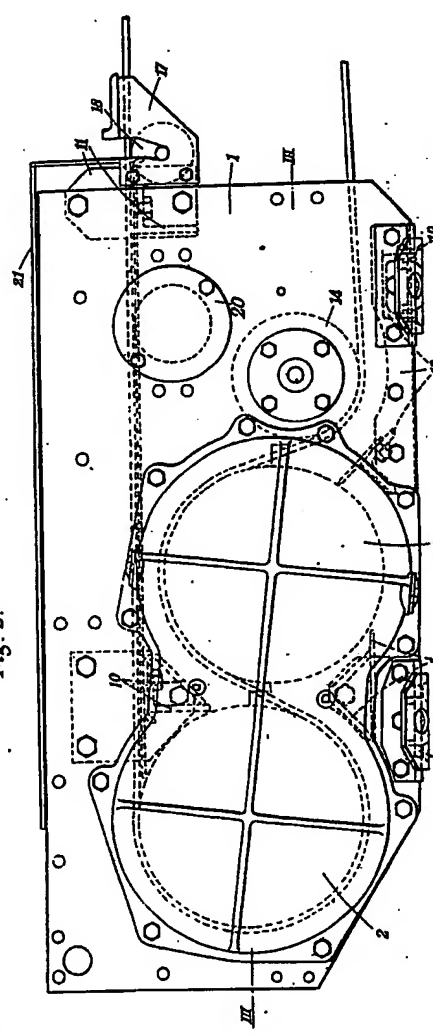


Fig. 4.

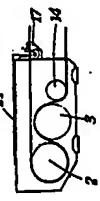


Fig. 5.

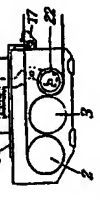


Fig. 6.

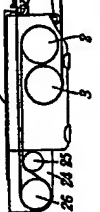


Fig. 7.

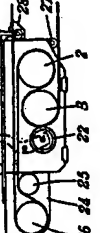


Fig. 8.

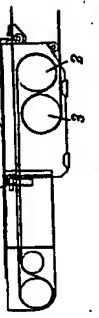


Fig. 9.

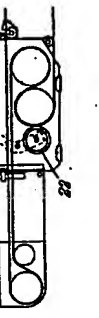


Fig. 10.

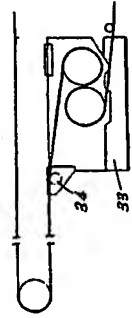


Fig. 3.

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